

REDISCOVERY OF HEMICHROA MESEMBRYANTHEMA F. Muell. (AMARANTHACEAE)

by

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ABSTRACT

Chinnock, R. J. and Badman, F. J. Rediscovery of *Hemichroa mesembryanthea* F. Muell. (Amaranthaceae). *Muelleria* 6(3): 205-209 (1986). — *Hemichroa mesembryanthea* was recently rediscovered, 112 years after Ernest Giles first collected it. A detailed description and illustrations of the species are provided and relationships with the two other species of *Hemichroa* are considered. The known distribution and ecology of the species are discussed.

INTRODUCTION

In August 1872 Ernest Giles embarked on the first of his exploring expeditions to arid regions of Australia, including what is now northern South Australia. The trip was partially sponsored by Ferdinand Mueller, the government botanist at the Melbourne Botanic Gardens, hoping that Giles would in return collect plant specimens for him. One of the collections made by Giles near Lake Eyre was described by Mueller in April of the following year as *Hemichroa mesembryanthea*. No further specimens of this species are known to have been collected since that time.

In August 1984 F. J. Badman found two plants growing at Strangways Springs on the west side of Lake Eyre and a pressed specimen of them was identified as *Hemichroa mesembryanthea*. During a concerted search for it in March 1985 three populations of this species were located between Strangways Railway Siding and Mound Springs ruins (Fig. 1). Two of the populations (sites B & C) consisted of between 200 and 300 plants each while the third (site C) was much larger, having an estimated 600 plants.

It is very likely that Giles collected his specimen in this general area as he passed through Strangways Springs Telegraph Station on his way to Peake. He also made reference to the mound springs and their value as a water source in the preface to the account of his journeys to central Australia published in 1889.

DESCRIPTION

Hemichroa mesembryanthea F. Muell., *Fragm.* 8:38 (1873); J. Black, *Fl. S. Aust.* edn 1:209 (1924); edn 2:323 (1948). — *Polycnemon mesembryanthemum* (F. Muell.) F. Muell., *J. Bot.* 15:276 (1877); F. Muell., *Syst. Census Austral. Pl.* 1:29 (1882); F. Muell., *Second Syst. Census Austral. Pl.* 49 (1889); Tate, *Fl. Extratrop. S. Austral.* 219 (1890). HOLOTYPE: *E. Giles s.n.*, towards Lake Eyre, no date (MEL 98604).

Erect glabrous divaricate shrub 0.6-1(-1.1) m tall, 0.6-1.5(-2.35) m diam. *Branches* fleshy, light reddish-purple, glaucous, becoming light brown when woody, very finely striate and minutely irregularly papillate; branch tips more or less spinescent. *Leaves* opposite, adnate to the branch, succulent, glaucous, grey-green but often tinged purplish; free part triquetrous or clavate, (5-)15-22 x 2.5-4 mm, mucronate, constricted just above the base, base purplish, slightly gibbose. *Flower spikes* terminal; floral bracts opposite or subopposite, at flowering stage 9-12 x 2.5-3.5 mm, erect and similar in shape and colour to the leaves although the adaxial surface is concave in the basal half; during fruit development the bracts enlarge to

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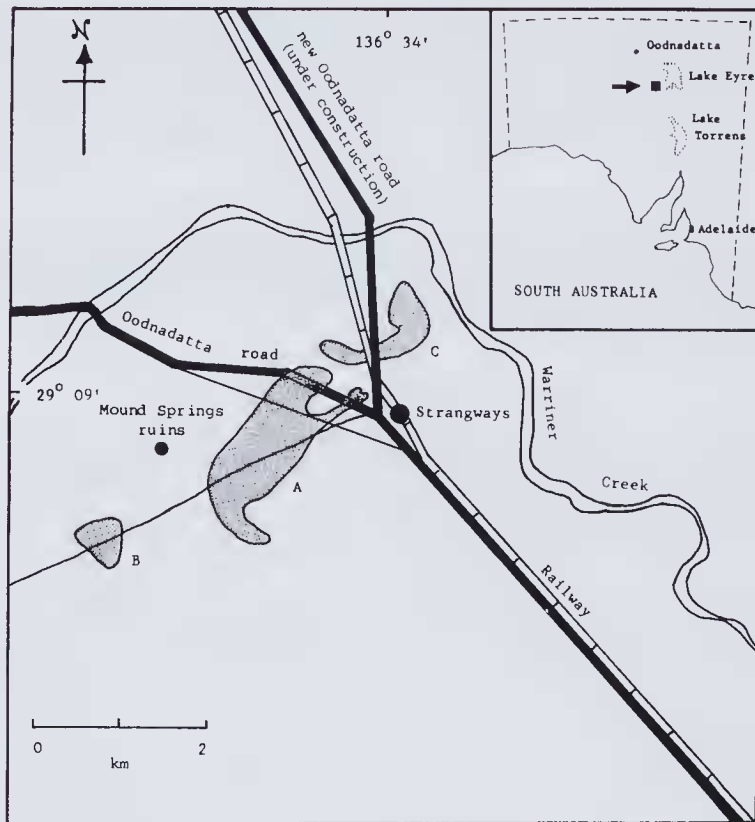


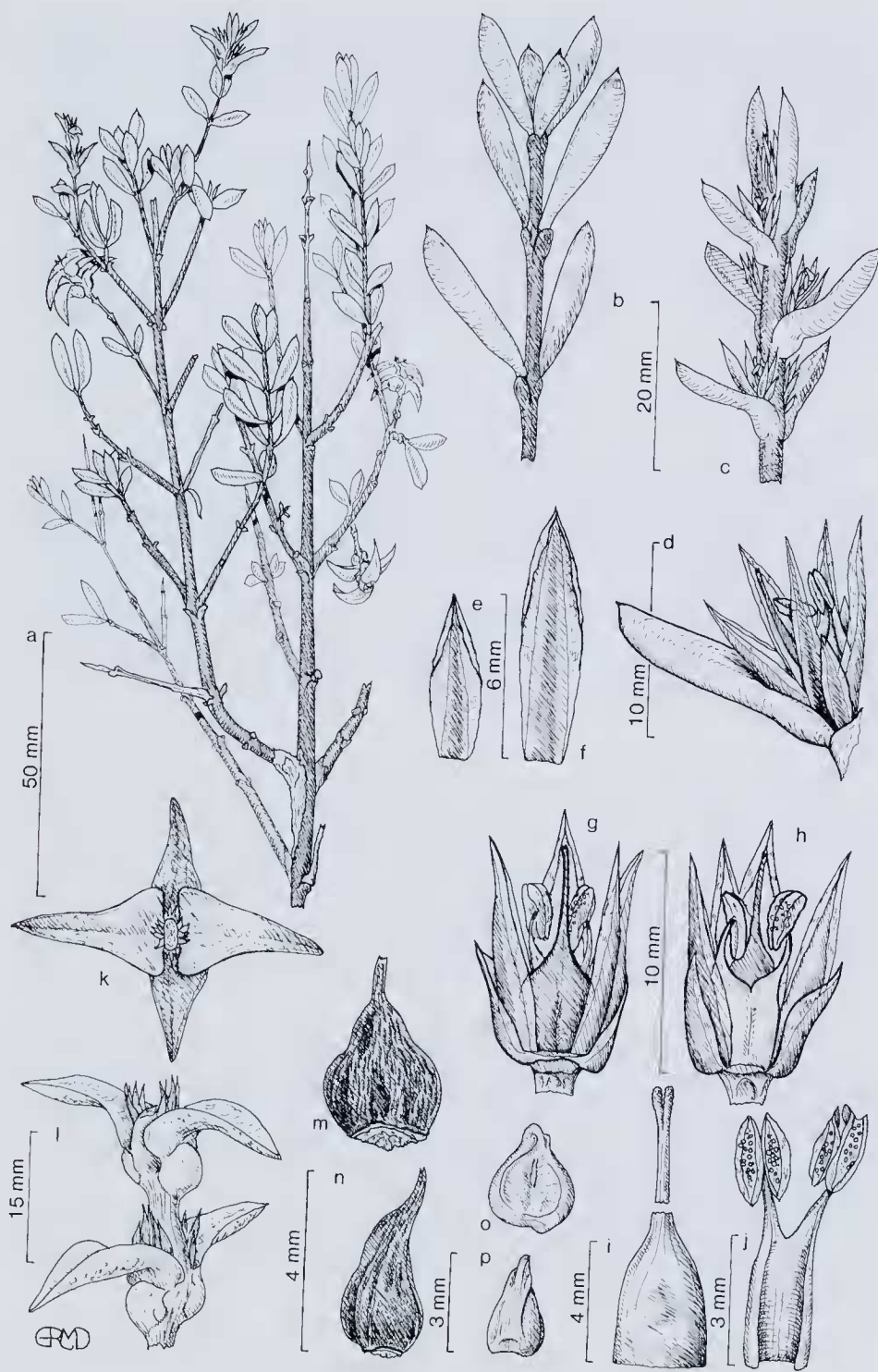
Fig. 1. Known populations of *Hemichroa mesembryanthea*.

15-30 x 7-10 mm, becoming patent or reflexed, rigid and pale brown on drying with the apex weakly spinescent and the base prominently gibbose. *Flowers* solitary in the bract axil; bracteoles lanceolate, 4.5-7 x 1.3-2.3 mm, acuminate, prominently keeled, the midportion fleshy, green drying brown, the margins membranous, translucent. *Tepals* 5, imbricate, subequal, lanceolate, 7.5-10 x 2-3 mm, acuminate, medial portion thick, green, drying pale brown, marginal portions white, translucent along edges. *Stamens* 2; filaments bright red drying black, connate in lower two-thirds, dilated and flattened, more or less plate-like, appressed to ovary; anthers yellow, bilocular, dehiscing longitudinally. *Ovary* superior, bright red, ovoid, compressed on posterior and anterior surfaces, unilocular with one ovule, smooth; style with a bifid stigma. *Fruit* indehiscent, crustaceous, black, ovoid, 3-4 x 2.3-3.7 mm, compressed, more or less rugose. *Seed* light brown, pyriform to almost globose, 2.7-3.5 x 2-2.5 mm, smooth.

SPECIMENS EXAMINED:

South Australia (Lake Eyre region) — *Badman 1407*, Strangways Springs, 2.viii.1984 (AD, CANB). *Badman 1633*, 1 km N. of Strangways Rail Siding, 10.iii.1985 (AD, MEL). *Badman 1637*, 2 km W. of Strangways Rail Siding, 12.iii.1985 (AD, MEL). *Badman 1640*, 3 km W. of Strangways Rail Siding, 16.iii.1985 (AD).

Fig. 2. *Hemichroa mesembryanthea*. a—habit. b—vegetative shoot. c—floral shoot. d—open flower in bract axil. e—bracteole. f—tepal. g & h—adaxial and abaxial views of flower. i—ovary and uppermost part of style with bifid stigma. j—stamens showing the dilated connate base and longitudinally dehiscent anthers. k & l—top and side view of mature fruiting bracts (cf. flowering bract (c), same scale). m & n—abaxial and side view of fruit. o & p—distal and lateral view of seed. All from *Badman 1637*.



DISTRIBUTION AND ECOLOGY:

Hemichroa mesembryanthea is, according to present records, endemic to the Strangways-Mound Springs area between latitudes 29°08' and 29° 09'S. and between longitudes 136°32' and 136°34'E. It occurs in low shrubland dominated by chenopodiaceous shrubs on fine powdery yellowish-red saline clay loam on low-lying flats.

At site A, *Halosarcia* species predominate although *Atriplex vesicaria* and *Maireana astrotricha* are very common. In the northern part *Acacia ligulata* and *A. victoriae* are common although they do occur sporadically throughout the area together with *A. tetragonophylla* and *Pittosporum phylliraeoides*. Perennial grasses *Enneapogon cylindricus* and *Panicum decompositum* and numerous ephemerals including *Helipterum floribundum*, *H. strictum*, *Calocephalus platycephalum*, *Streptoglossa adscendens*, *Salsola kali* and *Osteocarpum dipterocarpum* are also common. *Convolvulus erubescens* is frequently found climbing over *Hemichroa* plants.

The vegetation at sites A & B are comparable but at site C *Maireana astrotricha*, *Acacia ligulata* and *A. victoriae* are absent and replaced by *Acacia stenophylla*, *Atriplex nummularia*, *Nitraria billardieri*, *Lawrenzia glomerata*, *Frankenia* sp. and *Eragrostis* sp.

Hemichroa mesembryanthea occurs on low-lying flats or along drainage systems in a band running north-east to south-west between the Mound Springs ruins and Strangways. The species is, however, absent from the limestone mound springs, the lowest lying areas dominated almost exclusively by *Halosarcia* spp., the gibber plains to the south dominated by *Maireana pyramidata* and the low sandy rises and dunes.

During March 1985 rabbits were found to be common at all sites and about 100 cattle were watering at Strangways Bore, but no browsing of *Hemichroa* was observed. It is interesting to note that Leigh, Boden & Briggs (1984) considered that the presumed extinction of *H. mesembryanthea* appeared to be the result of grazing by domestic stock and rabbits.

NOTES:

Hemichroa mesembryanthea is closely related to *H. diandra* R.Br. Both species have floral bracts which, during fruit formation, enlarge and develop a gibbose base; they have two stamens which have their filaments connate and dilated in the basal half or two-thirds and ovoid to pyriform, pale brown, smooth seed with a dull surface. The former species is readily distinguished by its divaricate branch pattern, the glabrous branches with more or less spinescent branch tips, opposite leaves and bracts, red staminal filaments and ovary, the greatly enlarging floral bracts which become patent or reflexed and a seed which is twice as large. In *H. diandra* only slight enlargement of the bracts occurs and the base quite often is not gibbose.

The third species in the genus, *H. pentandra*, is not considered to be closely related to the above two species. The branches are densely hairy towards the apices; the leaves and bracts are not adnate to the branches below the free base; the floral bracts neither enlarge nor become gibbose; five free stamens occur in a ring around the ovary and the seed is sublenticular, black and glossy. In addition this species appears to be confined to coastal saline swamps whereas both *H. diandra* and *H. mesembryanthea* favour soils adjacent to coastal swamps or shores or areas only subject to occasional floodings in inland areas.

It should be noted that Black's (1924, 1948) reference to twin flowers in *Hemichroa mesembryanthea* is misleading. Only one flower occurs in each bract axil and presumably he meant that the flowers were paired along the branch because of the opposite, connate, bract pairs.

CONSERVATION STATUS:

Leigh et. al. (1981) gave *Hemichroa mesembryanthea* a conservation status

rating of 1X (known only from the type collection and not collected in the last 50 years). The amended rating is now 2V. However, the populations should be monitored as they are adjacent to the Marree — Oodnadatta road and already a number of cleared lines for a new road (now abandoned) have been cut through site A, the largest population of the species. A new Oodnadatta road is being constructed through site C and a station track passes through sites A and B (Map 1). Between 50 and 100 plants have already been destroyed by earthworks associated with the new road.

ACKNOWLEDGEMENTS

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